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ABSTRACT

This report describes a program to enhance spelling word retention through the use of background music. The targeted population consisted of elementary students in three middle class communities located in the southwestern suburbs of Chicago. The problems for poor spelling retention were documented through data revealing the number of students needing an enhanced/alternative method of teaching spelling. Analysis of probable cause data supported the hypothesis that students are not as successful using traditional spelling methods. Review of student test scores, anecdotal records, and observation checklists revealed that students could improve their spelling scores through modifying the learning environment. A review of solution strategies documented in research literature together with an analysis of the problem setting resulted in the selection of possible interventions. Teachers employed background music in order to promote higher student achievement in spelling. Post intervention data indicated an improvement in students' spelling word retention. Spelling test scores and report card grades indicated a positive academic growth. Music enabled the students to concentrate, relax and revisualize spelling words. Contains 29 references, and 3 tables and 3 figures of data. Appendixes contain observation checklists, survey instruments, parent permission letters, and anecdotal notes. (Author/RS)

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USING BACKGROUND MUSIC TO ENHANCE MEMORY AND IMPROVE LEARNING

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An Action Research Project Submitted to the Graduate Faculty

Of the School of Education in Partial Fulfillment of the

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ABSTRACT

This report describes a program to enhance spelling word retention through the use of background music. The targeted population consisted of elementary students in three middle class communities located in the southwestern suburbs of Chicago. The problems for poor spelling retention were documented through data revealing the number of students needing an enhanced/alternative method of teaching spelling.

Analysis of probable cause data supported the hypothesis that students are not as successful using traditional spelling methods. Review of student test scores, anecdotal records, and observation checklists revealed that students could improve their spelling scores through modifying the learning environment.

A review of solution strategies documented in research literature together with an analysis of the problem setting resulted in the selection of possible interventions. Teachers employed background music in order to promote higher student achievement in spelling.

Post intervention data indicated an improvement in students' spelling word retention. Spelling test scores and report card grades indicated a positive academic growth. Music enabled the students to concentrate, relax and revisualize spelling words.

CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

Students of the targeted elementary classes exhibit a need to enhance spelling word retention. Evidence for the existence of this problem includes teacher observation checklists, anecdotal records and informal assessments.

Immediate Problem Context

This action research project was conducted in three school districts in three different communities. Each setting will be described separately as Site A, Site B, and Site C.

Site A

Site A is located in a southern suburban community. Within Site A school district, there are 12 schools: one early childhood, five primary, three intermediate and three middle schools. Site A is located on a city block surrounded by private homes. Site A was constructed in 1964 and originally designed to house sixth, seventh, and eighth grades. In the 1970s, the building was renovated when the open school concept was the new wave of education. The library was located in the center of the building with 18 open classrooms surrounding it. There were an

additional nine enclosed classrooms. In 1988, the building was reconfigured to house grades three through five. In 1998, fifth grade was moved to a rental property out of district and four second grade classes were added. Use of this facility by 620 second through fourth grade students presents certain challenges including excessive noise level, particularly for cooperative group activities, lack of playground space, and overcrowding. The population of the facility includes 54.9% Hispanic, 45.1% Caucasian, 13.7% African-American, and 0.9% are Asian or Pacific Islander. Site A has an attendance rate of 95.2% with a chronic truancy rate of 1.3%, and a school mobility rate of 17.8%.

The school offers special programming for transitioning language students, gifted and special education students. A dual-language program has been expanded to include students through grade four.

The district faculty of Site A has an average teaching experience of 17.0 years with 48.8% of the total number of teachers with a Master's Degree or above. The 211 staff members are 85.3% female and 14.7% male, and of those 80.4% are Caucasian, 10.9% African-American, 7.6% are Hispanic, and 1.1% are Asian or Pacific Islander. Teachers' salaries average $40,338 and administrators' salaries average $60,328. Throughout the district, the class size averages 27.8 students. The district expenditure per pupil is $5,513.

Site B

Site B is part of a rapidly growing district consisting of ten schools: four primary, three intermediate, and three junior highs. This facility sits on a hill surrounded by several acres of land, a pond, and a protected nature preserve in a southwestern suburban area of Chicago. This seven-year-old building is circular in shape with two floors, each floor consisting of a number of

wings. Each wing is color-coded and easily discernible for primary aged children. This school houses kindergarten through second grade. There are six second grades, eleven first grades, and eight kindergartens. The school population of 530 is primarily White Non-Hispanic (92.7%). The next largest race/ethnic group is Asian or Pacific Islander (3.0%). Black Non Hispanic (2.1%), Hispanic (1.6%), and Native American (0.4%) students are also represented. The school has a small population (1.5%) of limited English proficiency students who require special programming and services. The other disaggregated group is the IEP/Special Education group, which comprises 12.2% of the school population. Site B has an attendance rate of 96.2% with no chronic truants and a student mobility rate of 3.5%. Services are delivered within the regular education classroom and/or on a pullout basis depending on the student's needs. The school does not have a gifted or vocational program. Extensive staff development programs are available to teachers to help them accommodate the needs of students in an otherwise disaggregated group.

The district staff averages 306 teachers with 87.2% female and 12.8% male, and of those 96.1% are Caucasian, 2.0% are African-American, 1.3% are Hispanic, and 0.7% are Asian or Pacific Islander. Teachers have an average of 13.5 years of teaching experience with 63.1% of the total number of teachers with a Master's Degree or above. The average teacher's salary is $42,377, while the average administrator's salary is $77, 030.

Site C

Site C is located in a near southwest suburban area of Chicago with an enrollment of 320 students. It is one of five elementary schools in the district, three of which are kindergarten through eighth, and the other two kindergarten through fifth. The original school facilities were

built in the early 1950s and housed kindergarten through third grade. As the community grew, classrooms were added to accommodate an increase in the school age population. Due to the closing of a neighboring parochial elementary school, and the influx of its students, Site C's boundaries were changed and the sixth, seventh, and eighth grades were moved to another school in the district. Currently, Site C has two classes each of grades first through fifth, with an all day kindergarten in its second year. The school also houses the primary self-contained Learning Disabilities/Behavior Disorder Program for the Special Education Cooperative (herein referred to as "Coop").

Approximately 90% of the students in Site C are Caucasian, of the remaining 10% approximately 9% are Hispanic, and 1% are Asian or Pacific Islander. There are 10.8% low-income students whose families are receiving public aid and 3.2% are limited English proficient. Site C has an attendance rate of 95.2% and a student mobility rate of 12.6%.

The number of teachers in the district averages 127 with all of them being Caucasian. Teachers in the district have an average of 10.4 years of teaching experience, 60.6% hold a Bachelor's degree while 39.4% hold a Master's degree and above. The pupil to teacher ratio is 18.1:1 and the average class size is 28.5 for kindergarten, 24 for Grade 1 and 26.3 for Grade 3. Teacher's salaries for the district average $33,747 while the average administrator's salary is $60,595.

Site C is part of a full inclusion district and has been for the past five years. The teachers along with the special education teachers, speech and language therapists, and aides meet weekly to co-plan and adapt the curriculum on an "as- needed" basis to meet the needs of the inclusion students. This team approach enhances a positive attitude towards inclusion, promotes strong working relationships among the staff, and is in the best interest of the inclusion students.

Each school in the district has a full-time social worker and a school psychologist is contracted through the Coop and is in the district full-time. Other services provided within the district include Early Childhood Program, English as a Second Language, Gifted, Reading Improvement, library and technology services. In addition to these services, the faculty at Site C continues to try to generate opportunities for student enrichment and growth by providing additional programs. These include a before school program beginning at 8:00a.m., daily homework club, after school classes and clubs, and Readees Program where senior citizens and community members volunteer their time to read aloud to students.

The Surrounding Community

Site A

Site A is located in a typical older suburban community. There is a wide range of economic and cultural diversity. The community has an award-winning high school, new housing developments, a boat launch, and new golf courses to attract families. This is in contrast to the older historical landmark Victorian homes and Sears Roebuck "kit" homes built in the early 1920s. This community is essentially a blue-collar community. The median family income is $41,635 and residential housing values average $81,401. Approximately half of the residences are single family units, and the remaining are multiple family dwellings. Apartments rent for an average of $655 per month.

Over the past decade, the community has experienced a shift in both ethnic and economic composition. According to the 1990 Census, the population of 20,030 breaks down as 75.5% Caucasian, 14% Black, and 10.3% other races. Approximately 25% of the residents are of Hispanic origin. There are 1,025 persons who are naturalized citizens, with 2,048 who have not

received citizenship yet. These changes have impacted the schools as evidenced by an increase of student mobility, free lunches, and a decrease in attendance.

In recent years, the once-bustling business community suffered severe losses with many major plants and stores closing. The Chamber of Commerce has worked diligently to attract new businesses by offering tax increment financing in order to increase property tax revenues. There is now a positive attitude between the businesses and the residents. Evidence of this is the passage of a bond referendum for new school construction. According to the Chicago Tribune, the popular mayor states "we've all pulled together to make the town better."

Site B

Site B is part of a dynamic and progressive south suburban community of more that 40,000 residents. This area affords recreational opportunities including thousands of acres of Forest Preserve with hiking trails, bridle paths and wildlife refuges. An excellent park system, a multi-million dollar aquatic center, and more than 20 acres of golf courses attract new families to this area. Residents also enjoy several shopping opportunities, nationally acclaimed schools and a diverse array of housing. New construction includes houses, townhouses, apartments, and condominiums. Typical older homes include brick split-level. Most homes range in price from $120,000 to $400,000. While a few single-family homes cost about $1 million, the median home value is $189,609. Recently, a special fund was established to preserve natural landscaping sloughs and wildlife. Three golf courses lie within the boundaries of the community and the area high school is recognized for an award-winning teaching staff.

This community which was once agricultural in nature, has now become a rapidly expanding suburb, which has seen a change in population growth from 1970 to 1997 of 644.5%.

This swift change has caused overcrowding and congestion. It will take time to build adequate schools and businesses to support this growth.

Site C

Site C serves two surrounding communities with a forest preserve on the western border and the world's largest sewage treatment plant on the east. The main community that feeds into the school has a population of approximately 6,100 and was described in the Chicago Tribune by the top elected official as "a lot like Mayberry. Crime is so low [I think] there has been one garage break-in in the last three years." The community is basically blue collar with a majority of its population reflecting the ancestry of its early settlers, Czech, Polish and German.

The houses are a mix of bungalow, brick, and bi-level homes with an average value of $117,000, while the average two-bedroom apartment, of which there are few, rent for about $500 a month. Although the village does not receive any taxes from the sewage treatment plant, it does receive a nominal fee for leasing the land. Revenues from local industries and a nearby racetrack keep tax bills relatively low. There is also a township health clinic, which provides free dental care and physicals, including immunizations, to children and senior citizens.

National Context of the Problem

Previous studies have concluded that exposure to background noise, music in particular, affects academic performance of students. Research conducted by Don Campbell, author of The Mozart Effect (1997), supports claims that listening to background music can aid in improving children's academic performance. French researcher, Dr. B. Belanger (1978) substantiates the use of a variety of classical music to help stimulate and maintain the optimal learning atmosphere. Listening to music during learning not only helps to eliminate "white noises"

(voices in adjacent rooms and the hum of lights, etc.) but also creates a sustained supportive ambiance. Gordon Shaw of University of California at Irvine comments "that when children exercise cortical neurons by listening to classical music, they are also strengthening circuits used for mathematics. (Music) excites the inherent brain patterns and enhances their use in complex reasoning tasks" (as cited by Tacker and Tracy, p. 57).

According to Bulgarian psychiatrist, Dr. Georgi Lozanov (as cited in Ostrander, Schroeder and Ostrander, 1979), music strongly influences our ability to relax, rejuvenate and concentrate. Lozanov's work suggests that music integrates the quantity of information learned and retained (Campbell, 1997).

G. Douglas Olsen conducted an experiment to determine if background music and silence influence the acquisition of certain information. Contrary to Lozanov's research, however, Olsen's experiment suggests that music can impair the processing of certain brands of information and reduce recall at shortened intervals (Olsen, 1997). A study was later performed to investigate whether listening to any music or to a particular type of music would have an effect on the spelling scores of first grade students. Results indicated that while listening to music prior to spelling instruction, a statistically insignificant gain was shown. Greater achievement occurred when students listened to Mozart than when they listened to Vivaldi or symphonic versions of Disney themes (Botwinick, 1997).

Although there are differing opinions on the effects of music, current studies suggest that incorporating background music into the learning environment may help to improve students' academic performance and create a positive effect on cognitive development.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

Documentation was collected to show evidence that there was a need for improvement of spelling word retention. Within the targeted elementary schools, data was collected and assessed to support the need for an intervention. The following instruments were used for the purpose of data collection: anecdotal records, informal assessments, observation checklists, teacher made spelling tests, and students' report card grades. These instruments were developed and implemented to better provide the researchers with an accurate picture of students' needs. A total of 59 students participated in this action research project, 38 students at Site A, 18 students at Site B, and 3 students at Site C.

The intervention was implemented and records were kept from January of 1999 through June of 1999. The observation checklist (Appendix A) identifies baseline behaviors and study habits of the students that participated in this study. These behaviors were documented to determine their impact, if any, on this action research project and to decide whether or not the intervention would aid with spelling word retention. During the acquisition of new spelling words, the following off task student behaviors were observed: talking with each other, tapping of pencils, self talk, movement in and out of seat, and inattentiveness. The researchers also noted that students frequently requested teacher directions to be repeated.

A pre-intervention survey (Appendix B) was given to targeted students to determine the influence that music has on their daily lives. Surveys were given to 59 students in January of 1999. Table one depicts a compilation of individual responses to the survey statements shown in Appendix B. Students responded to statements by circling either "Yes" or "No." Overall, Table 1 is indicative of students' feelings about music, where and when the students listened to music and if students listened to music with others.

Table 1

Student Pre-Intervention Survey Results

January 1999

Statement	Yes	No
1. Music makes me feel happy.	44	15
2. Music makes me feel relaxed.	39	20
3. I listen to music in the car.	46	13
4. I listen to music in my bedroom.	39	20
5. I listen to music when I eat.	18	41
6. I listen to music when I do my homework.	33	26
7. I listen to music when I read.	29	30
8. I listen to music in the morning.	30	29
9. I listen to music when I go to sleep.	27	32
10. I listen to music with my friends.	46	13

In an analysis of the data, a large percentage of the students responded "Yes" to eight of the ten statements. This is evidenced by 74% of the targeted students who responded that music makes them happy and 66% who responded that music makes them feel relaxed. Seventy-eight

percent of the students positively responded to the statements "I listen to music in the car" and "I listen to music with my friends."

A review test was given to students to assess their ability to retain spelling words introduced during the first semester. Students' scores on this 30-word assessment are summarized in Figure 1.

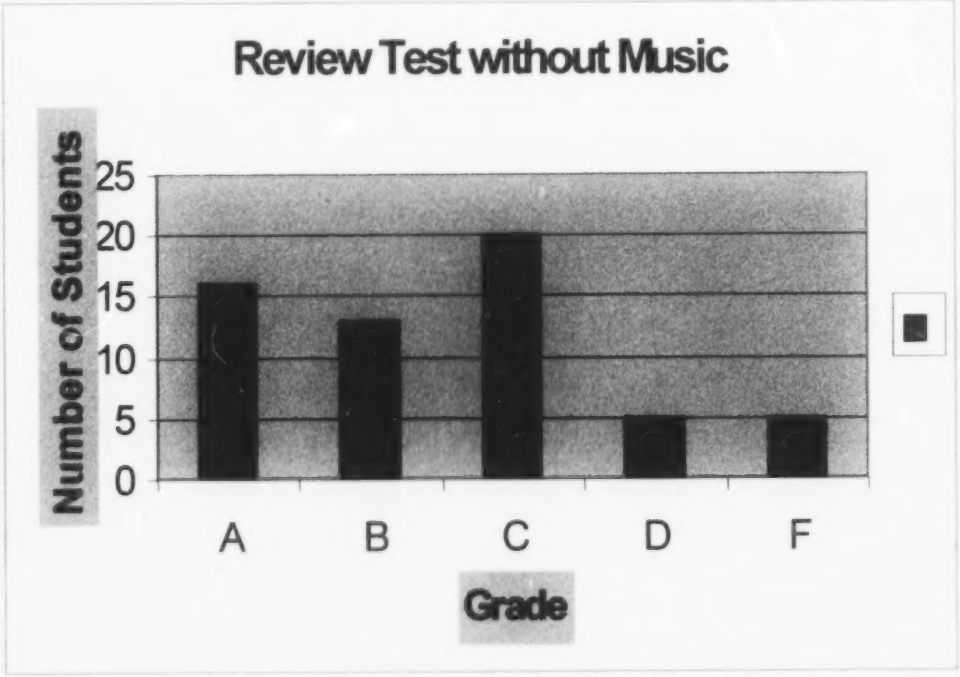


Figure 1

Of the 59 students tested more than 50% of the students scored a "C" or below. Twenty students scored a "C," five students a "D" and five students an "F." Further analysis of the test scores revealed that 17% of the students received a below average grade ("D" or below).

Students' spelling grades from the first semester report cards were recorded as baseline information. A summary of these grades are documented and presented in Figure 2.

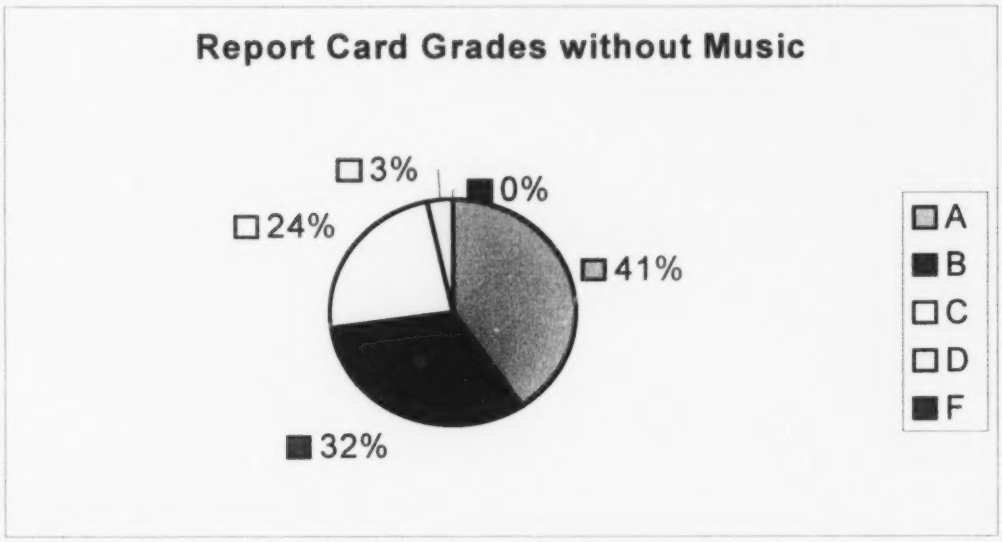


Figure 2

These report card grades reflect students' test scores, daily spelling work and related supplemental assignments. Of the 59 students involved in this action research, 24 students earned an "A" and 19 earned a "B." Sixteen of the students earned a "C" or below.

Probable Cause

A variety of influences can negatively impact students' academic performance. The researchers will primarily focus on those influences that adversely effect spelling word retention. Probable causes for such may include, but not be limited to: inability to stay on task, poor short term and/or long term memory retention, frustration due to difficulty of material and stress-related issues. Poor academic performance can also be due to lack of interest and low motivation. Educators are challenged to find ways to enhance the learning environment as well as meet the needs and interests of students with differing abilities. Creative ways to improve memory retention, reinforce weekly spelling lists and reduce students' stress need to be developed. One way to accomplish this is by "tapping" into the powerful link between music and learning.

Dr. Georgi Lozanov (1989), a pioneer in the study of the effects of music on memory and learning, found that music has the potential to create a state of relaxed alertness, which he refers to as "psycho relaxation." It is during this state of "psycho relaxation" that Lozanov observed a significant increase in alpha brain waves, which, according to Uschi Felix (1993) may be conducive to higher achievement. Another major belief of Lozanov is the concept of "whole brain" learning. Lozanov's (1989) learning system called "Suggestopedia" attempts to unite the body with the left and right brain abilities. This working together as an orchestrated whole helps individuals achieve their optimal level of learning.

Studies have shown that the left hemisphere of the brain processes language while the right hemisphere processes music. It is through activating these multiple channels of input that memory retention is increased. Research shows that the playing of music helps to improve abstract and spatial reasoning, foster positive attitudes and increase attention. All of which are important in improving student achievement.

Howard Gardner (1983), the father of multiple intelligences, stated that memory retention can be hampered due to an instructor's one-dimensional teaching style. According to Gardner (1983) "...not all people have the same interests and abilities, not all of us learn the same way..." (p. 190). In another study, Campbell (1997) found that students could not spell well because both the auditory stimuli provided by the teacher and students' ability to track information were faulty. Nelson identified anxiety and fear of failure as additional contributing factors to students' lack of success (as cited in Ostrander, 1994).

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

The power of music has received much public attention in the past several decades. From the strong grip that rock and roll has on American adolescents to the ongoing struggle to keep music education in the classroom, music influences our children. Latest research findings suggest that music may also be a contributing factor in stimulating parts of the brain, improving memory and enhancing learning. The researchers will examine the role that music has in our culture. music as a part of the school curriculum, and the influence of music on the human brain. Finally, studies will be presented with regard to the effects of music on learning.

Music plays an important role in our culture and influences our youth. "According to Teenage Research Unlimited, teenagers spend an average of 20 hours a week listening to music – twice as much as they do watching television" (Lindsay, 1999, p. 31). Majewski states, "[It] is … the most influential thing in a teen's life. They listen to music when they wake up. They listen to it in the car on the way to school, when they come home, while they're doing their homework. It's the soundtrack of their lives" (Lindsay, 1999, p. 31).

Although the research indicates that music is an important part of our culture, this impact is not always recognized in the field of education. "Now labeled extracurricular activities, music and art are the first areas attacked when a school faces budget cuts" (Tacker & Tracy, 1996, p.

57). Such cutbacks occur even though "a recent Gallup poll show that 93% of Americans agree that music is part of a well-rounded education" (Growing Up Complete, 1998). Sousa, a proponent of music education, believes that music programs should not be cut when funds become scarce. According to Sousa, children who encounter music at an early age benefit academically in the long run (as cited in Making the Connection, 1998). Raucher, another advocate of music education, states that music should be treated as an important part of the curriculum, because it is not only a major part of our culture, but because of how it benefits brain development. Although the benefits of music education are slowly being recognized, it is not as equally valued as the core subjects (as cited in Tacker & Tracy, 1996).

"Researchers discovered direct evidence that music stimulates specific regions of the brain responsible for memory, motor control, timing and language" (Hotz, 1998, p. 34). By studying the brain, neuroscientists Wiesel and Hubel, are discovering that much can be learned about the process of "learning" (Kotulak, 1993). According to Fogarty (1997), the more that is discovered about how the brain acquires knowledge, the more success there will be in teaching and learning.

To gain a better understanding of music's effect on the brain, let us examine this amazing structure. The largest area and representing 80% of the brain is the cerebrum. It is comprised of the left and right hemispheres. The left hemisphere is responsible for language, memory, speech, and logic. Music, art, and spatial relationships are processed by the right hemisphere. According to Brazen, the hemispheres of the brain should not be treated as separate "parts" but as a "whole" (Lynch, 1987). When information is processed, both the left and right hemispheres of the brain are used so that our perceptions and conclusions are clearer (Lynch, 1987). People who utilize both hemispheres are believed to be "whole-brain" dominant and are able to integrate

information inductively and deductively (Lynch, 1987). However, today's schools tend to have a built-in bias toward the left-brain learners (Buzan, 1983). According to Campbell (1997), music stimulates the under active parts of the right brain allowing "whole-brain" learning to occur. It is important for students to be given activities that stimulate both sides of the brain for a more balanced approach in perceiving and understanding (Buzan, 1983).

The hippocampus, which is located at the base of the cerebrum, plays a major role in consolidating left and right brain learning and converting information from working memory into long term storage (Sousa, 1995). Information relayed to short term memory can be stored as either images or sounds – especially when remembering words (Campbell, 1997). This memory is constantly being checked and compared to stored experiences, a process which is essential for constructing meaning (Campbell, 1997). According to Sousa (1995), the more connections that the brain makes between new learning and past learning, the more understanding and meaning an individual can attach to new learning.

An almond-shaped structure called the amygdala is responsible for encoding emotional messages when learning is transferred from short term memory to long term storage. Whenever memory is recalled, the emotional message is also recalled. Under certain conditions, emotions enhance memory by causing the release of hormones that stimulate certain regions of the brain to strengthen memory (Fogarty, 1997).

Neuroscientists believe that by providing a rich environment and good experiences, trillions of neural connections are made and learning takes place faster and with greater meaning. New information is passed through small gaps called synapses. According to Weinberger (1998), listening to music strengthens brain synapses resulting in better memory retention. This ongoing process, greatest between the ages of 2 and 11, continues throughout our lives.

Schuster and Mouzon contend that listening to music produces a number of physiological changes that impact learning and that there is a close relationship between mood and achievement (as cited by Felix, 1993). Music promotes the ability to relax, freeing the brain to work and process properly (Botwinick, 1997). It also has the ability to calm the body and alter one's mood, leaving the brain more receptive to receiving and processing information (Botwinick, 1997). Music has been shown to lower heart rate and blood pressure and increase alpha brain wave activity (Botwinick, 1997; Felix, 1993; Ostrander, S., Schroeder, & Ostrander, N., 1979). Bancroft (1985) noted both the psychological and physiological benefits of listening to music, citing several learning systems that incorporate music therapy as a way of enhancing learning. Music can also counteract the stress induced chemical changes in the brain that can incapacitate its ability to learn (Zemke, 1995). According to Lazaar (1991), the effect of music and rhythm on the brain create the greatest consciousness alteration of all the intelligences.

Multiple studies have been conducted to determine the effects of music on learning. These studies offer differing points of view about whether music can enhance learning. The most dramatic of studies demonstrating the positive effects of music on learning is what is referred to as the "Mozart Effect." In the early 1990s, Rauscher and her colleagues at the University of California at Irvine conducted a study in which 36 undergraduates from her psychology department listened to Mozart for ten minutes before taking an IQ test. Test scores showed that those students who listened to Mozart scored significantly higher than their peers (Rauscher, 1996). This phenomenon resulted in the states of Florida and Georgia lobbying their congressmen to play Mozart in the classroom to increase IQ scores (Hotz, 1998).

In another study by Rauscher and Shaw, also of UC Irvine, thirty-four preschool children were given keyboard training (Campbell, 1997; Fauber, 1998). After several months of lessons,

all of the children could play basic melodies by Mozart and Beethoven and performed significantly better on spatial and temporal tasks than the other preschoolers who received computer lessons or other stimulation (Campbell, 1997; Fauber, 1998). Following these studies, a number of public schools have introduced Mozart pieces as background music and have found an increase in students' attention and performance (Campbell, 1997).

Botwinick (1997) conducted a study to determine if music has a facilitative effect upon learning. This study examined the effects of music on the spelling scores of first grade students. Prior to spelling instruction, students listened to one of three types of music or no music at all. Botwinick (1997) determined that while listening to music did not show a statistical gain in spelling scores, the type of music presented resulted in differing rates of improvement. Listening to Mozart provided greater gains than listening to Vivaldi or to symphonic versions of Disney themes (Botwinick, 1997).

In an earlier study, Schuster and Mouzon investigated the results of music's impact on immediate recall and retention of college students (as cited in Felix, 1993). The students were divided into three groups and were given vocabulary lists to learn while each group was exposed to a different situation, baroque, romantic, or no music. The group exposed to baroque music produced the highest results with the romantic group next and the no music group having the lowest results. The researchers surmised that the students experienced the learning environment with music as more pleasant than with no music, and this may have led to improved performance (Felix, 1993; Render, Hull & Moon, 1984).

In the early 1960s, Lozanov developed a technique called "Suggestopedia" in which memory is strengthened through the use of background music. "Lozanov would start with slow movements of classical music, music that has a steady beat of sixty beats per minute and found

that this rhythm could improve a person's memory more than fifty percent" (Ostrander, S., Schroeder & Ostrander, N., 1979, p. 33). More recently, students with the greatest learning problems in DeKalb County, Georgia were trained using Lozanov's methods and gained more than a year's reading ability in under twelve weeks (Ostrander et al., 1979).

Not all of the studies have determined that music has a positive effect on learning. An extensive study involving 256 college students attempted to corroborate Lozanov's findings that baroque music would enhance learning better than with no music (Schuster, 1985). In a study at Iowa State University, Schuster (1985) investigated the effect that music has on the acquisition and retention of vocabulary. Schuster (1985) found that exposure to a variety of musical selections which included rock, meditative, Japanese, classical, dissonant, baroque, or march, while studying material for tests or short quizzes, produced no evidence that can support Lozanov's findings. Contradicting previous studies, Schuster's (1985) results demonstrated that certain types of music could significantly interfere with learning.

Render, Hull and Moon (1984) investigated the effects of varying types of music on the acquisition of vocabulary words. Students were given tests under each of the following conditions: guided relaxation administered prior to testing, baroque music played during testing, both relaxation prior to testing and baroque music played during testing, and no music and no relaxation (Render et al, 1984). Results of this study revealed that certain kinds of music interfere with one's ability to concentrate.

In another study conducted by Obrecht (1991), a group of male fifth and sixth grade students with behavior disorders listened to instrumental background music through headphones during independent math time. Obrecht (1991) concluded that the playing of background music was not effective in increasing the students' academic productivity or on-task performance.

Nix (1991) designed a study to determine the relationships among classical background music, academic achievement and time-on task behavior of sixth grade students. One group of twenty-five students was expected to independently complete two sets of programmed materials while listening to classical background music. A control group, consisting of the same number of students, was also expected to complete these materials without listening to music. Findings indicated that no differences were discovered between classical background music and time-on-task behavior. Furthermore, background music was not a factor in the students' understanding of the materials. It appears that the programmed materials themselves promoted increased academic achievement for both groups of students.

While the controversy exists amongst the researchers on the effects of music on learning, educators are beginning to recognize the benefits of music and are incorporating music and rhythm in their everyday instruction. Teachers are finding that music can help to create a positive emotional environment that is conducive to learning (Botwinick, 1997). According to Campbell, Dickinson and Handy, music can heighten the suspense, sadness, tragedy, or joy of stories from great literature and history. It can also be used to express humor as well as to help calm and comfort over-stimulated children (Botwinick, 1997). Music engages students' attention and strengthens listening skills. Chanting songs can help to improve auditory memory and sequencing. According to Gardner (1996), singing and rhythm enhance the development of auditory discrimination skills, including integration of letter sounds, syllabication, and pronunciation of words.

Music can make learning more focused and effective. In addition, music creates a memorable and enjoyable climate conducive to learning. The incorporation of classical

background music used throughout our spelling instruction and assessment will give our students opportunities to develop and strengthen "whole-brain" processing.

Project Objectives and Processes

Research indicates that music plays an important role in our culture and is a strong influence on today's youth. In response to this information the focus of this project is to incorporate music in the classroom to positively promote student learning. This will be accomplished using background music to improve spelling achievement. During the period of January 1999 through June 1999, one group each of first grade students, third grade students, fourth grade-gifted students, self-contained cross-categorical special education third grade students, and self-contained cross-categorical special education fourth grade students will be targeted. We will investigate whether or not the playing of classical background music will improve the students' spelling scores as measured by traditional and nontraditional spelling tests, teacher observation checklists, anecdotal records, and student surveys. In order to accomplish this project, the following processes are necessary:

1. Elicit information from the respective teachers about students' spelling performance.
2. Select appropriate background music to enhance student learning.
3. Exposure to selected music during spelling instruction.
4. Assess effect of background music on learning.

Project Action Plan

I. Secure all necessary legal permission.

A. Present parents with letter of details about project (Appendix C).

B. Secure parent signature (if deemed necessary by school/district policy).

C. Obtain approval of Action Research Project from administration (Appendix D).

II. Gather information before intervention on traditional or nontraditional spelling activities/tests.

A. Administer pre-music survey.

B. Identify lessons targeted for record keeping and data collection purposes.

C. Introduce a spelling lesson to students based upon their ability/academic level.

D. Extend practice of study of each word list with varied daily spelling activities.

E. Test students' retention of current spelling words.

F. Record data from targeted spelling test.

G. Document behavior on observation checklist.

III. Modify classroom environment to improve students' concentration and attention.

A. Introduce background classical music.

B. Incorporate music on a weekly basis during spelling lessons.

C. Play/Repeat music introduced during spelling lessons.

D. Administer post music survey (Appendix B).

IV. Analysis of Data

A. Compare first semester and second semester report card grades.

B. Compare pre and post review tests.

C. Compare pre and post music surveys.

D. Examine observation checklists.

V. Recommendations

The information gathered will provide the researchers with insight into the impact music had on the students' ability to recall spelling words. Results will indicate whether this intervention created an atmosphere of comfort and enhanced the learning environment. The data will assist the researchers in determining future teaching practices.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The objective of this project was to improve the spelling word retention of the targeted elementary students. The playing of classical background music was implemented to effect such change. Evidence of the existence of this problem included teacher observation checklists, anecdotal records and informal assessments.

In order to accomplish the objective, the following instructional practices were employed: introduction of new spelling words, participation in a variety of spelling activities and assessment of spelling word retention. Specific classical music selections were played throughout this time.

The targeted elementary students consisted of a first grade regular education class, fourth grade-gifted class, fourth grade cross-categorical special education class, third grade cross-categorical special education class, and resource students from a fourth grade class. The intervention was put into practice for a period of six months and records were kept from January of 1999 through June of 1999. Researchers devoted approximately 45 minutes per day to the content area of spelling. New spelling words were introduced at the beginning of each week, and numerous spelling activities were implemented throughout the course of the week to reinforce

the retention of the spelling words. Weekly spelling activities ended with the administration of a test to assess students' ability to retain the correct spelling of words.

Teacher observations, anecdotal records and student surveys were used to substantiate the intervention that would best meet the needs of the students participating in the study. Samples of students' work, first and second semester spelling test scores, and observation checklists were used to compare and contrast student progress as well as note changes in behavior.

Presentation and Analysis of Results

The intervention was introduced during the third quarter of the 1998-1999 school year. The intent of the intervention was to enhance memory and improve learning. The targeted students listened to the music selection, *The Mozart Effect Music for Children (Vol.1)Tune Up Your Mind*. The researchers chose this particular music based upon their review of the literature. The music was played throughout the spelling activities and during the administration of weekly traditional and non-traditional spelling tests. Students' behaviors were also observed and documented during learning and testing situations.

In a comparison of the pre and post intervention survey results, the researchers noted that the targeted students at each site had very similar responses. Table 2 depicts the students' responses.

Table 2 – Student Responses

QUESTION ASKED	PRE-INTERVENTION		POST-INTERVENTION	
	YES	NO	YES	NO
1. Music makes me feel happy.	44	15	45	15
2. Music makes me feel relaxed.	39	20	49	11
3. I listen to music in the car.	46	13	52	8
4. I listen to music in my bedroom.	39	20	42	18
5. I listen to music when I eat.	18	41	21	39
6. I listen to music when I do my homework.	33	26	36	24
7. I listen to music when I read.	29	30	32	28
8. I listen to music in the morning.	30	29	33	27
9. I listen to music when I go to sleep.	27	32	33	27
10. I listen to music with my friends.	46	13	49	11

According to Table 2, the responses were as follows: Statement number one, "Music makes me feel happy," revealed that students made an emotional connection with music. In both surveys, 75% of the students agreed that music has a positive impact on their mood. No significant change was noted as a result of the intervention.

Statement number two, "Music makes me feel relaxed," showed that 66% of the students agreed with this statement during the pre-intervention. The post intervention survey indicated that 81% agreed with this statement, thus a 15% increase was noted.

Student survey question three, "I listen to music in the car," did not identify any substantial change. It was noted in the pre-intervention survey that 78% of the students enjoyed music in the car while 87% responded positively on the post intervention survey.

Statement number four, "I listen to music in my bedroom," reflected that most students incorporated music in more than one activity throughout their day. Among the results in the pre-intervention survey, 66% of the students responded positively. In the post intervention responses, 70% answered in agreement. It was noted that there was only a 4% increase as a result of the intervention.

Overall, the responses to question number five, "I listen to music when I eat," identified that the students had similar responses to this statement on the pre and post survey. In the pre-survey, 31% listened to music when eating and 35% after the intervention was implemented. There was a minimal change of 4%.

Statement number six, "I listen to music when I do my homework," indicated that 56% of the students agreed with this statement. On the post survey results, 60% of the responses were also positive. An increase of 3% was identified.

In statement number seven, "I listen to music when I read," a slight increase of 4% was noted. The findings of this statement reflected that in the pre and post survey responses the students had very similar attitudes towards reading with or without music.

For the statements, "I listen to music in the morning," and "I listen to music when I go to sleep," there was not a significant difference in student responses between the pre and post survey results.

Statement number ten, "I listen to music with my friends," implies the importance of music in the lives of our students. Seventy-eight percent of the students responded positively in the pre-intervention survey, as did 82% in the post intervention survey.

In the second phase of the intervention, the researchers administered a review spelling test consisting of 30 words to assess students' long term memory retention. An analysis of the

test scores indicated that the students did significantly better when compared to pre-intervention review test scores. A comparison of the students' review test scores is presented in Figure 3.

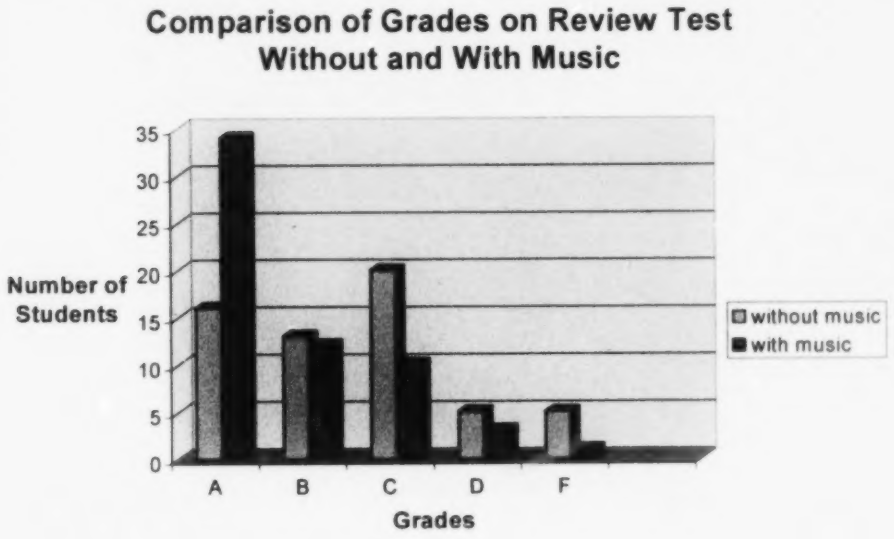
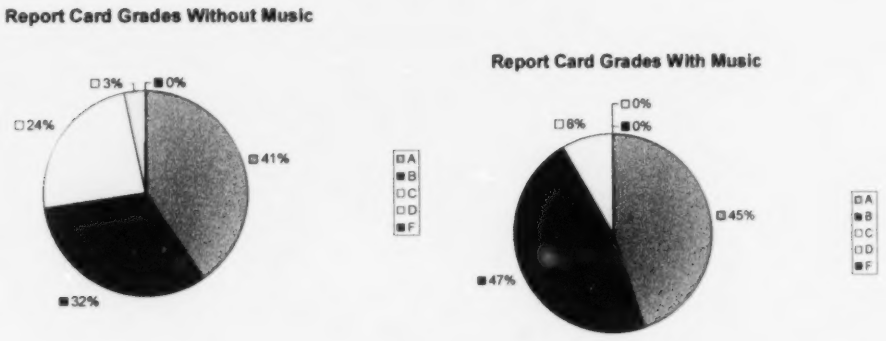


Figure 3

Before the intervention, 49% of the students received an A or B. After the intervention, this number increased to 77%. There was a corresponding drop in the number of students receiving C or below (from 51% to 23%).

In order to show additional evidence that the intervention had an impact on the students, first semester report card grades (without music) were compared to second semester report card grades (with music). Table 3 reflects students' performance before and after the intervention.

Table 3



A comparison of report card grades between first and second semester indicates an increase of 13% A and 7% B. There was a decrease of 4% in the number of students who received a C and 3% who received a D. No change was indicated for the grade of F.

Anecdotal records kept throughout the intervention indicated a positive shift in students' behavior. Researchers observed that students were able to remain on task for a longer period of time without interruption. Students were also eager to begin spelling activities and were observed working to the rhythm of the music. The level of concentration rose, resulting in fewer requests for repetition of words, sentences or directions.

Conclusions and Recommendations

Based on the researchers' findings and analysis of the data, the spelling word retention of the targeted students improved. Spelling review test scores and report card grades indicated positive academic growth. An unexpected result of playing classical music was that student behavior improved throughout the implementation of the intervention. Students commented that, "the music helps me concentrate, relax and remember the spelling words." Students also commented that the music is, "very comforting, quiet and helps us work faster. The music calms us when we feel nervous about a test" (Appendix E). The targeted students frequently requested that the music be played throughout the day.

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One recommendation that the researchers suggest is to incorporate the playing of music in various content areas throughout the day. Music provides a positive emotional climate conducive to learning. Throughout the intervention, it was observed that the stress levels of our students decreased, while their ability to focus and retain information increased.

The researchers also recommend the playing of classical music because of the physiological benefits it provides. The tempo of classical music selections such as baroque, Vivaldi, and Mozart matches the relaxed heartbeat of a human. This match provides an optimal condition for learning. The rhythm and harmony of this music activates brain waves and evokes emotions and memories.

Research has shown that schools tend to favor the left-brain child. Teachers should be challenged to include activities that incorporate both hemispheres. The researchers recommend introducing right-brain activities such as the playing of background music to provide a more balanced approach to learning. This "whole-brain" strategy will provide opportunities for students to reach their maximum potential.

Finally, several considerations need to be addressed before introducing music into the classroom. The age of the audience and individual learning styles must be taken into account. Additional factors include the appropriateness of the music selections, and the content being taught.

The researchers believe that the integration of classical music within the classroom will orchestrate an environment that is conducive to learning. Music infuses students lives with excitement, understanding and insight.

"Just as there can be no music without learning,

no education is complete without music."

(Anonymous)

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Appendices

Appendix A
Observation Checklist

OBSERVATION CHECKLIST

RATINGS:
+ = Frequently
✓ = Sometimes
0 = Not Observed

Teacher: _____

Date: _____

STUDENT	ON TASK	PARTICIPATES	FOLLOWS DIRECTIONS WHEN WORKING INDEPENTENTLY	WORKS QUIETLY	COMMENTS

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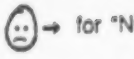
Appendix B
Pre/ Post Intervention Survey

MUSIC SURVEY

Directions: Circle for "YES" or  for "NO."

1.) Music makes me feel happy.

2.) Music makes me feel relaxed.

3.) I listen to music in the car.

4.) I listen to music in my bedroom.

5.) I listen to music when I eat.

6.) I listen to music when I do my homework.

7.) I listen to music when I read.

8.) I listen to music in the morning.

9.) I listen to music when I go to sleep.

10.) I listen to music with my friends.

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Appendix C
Parent Permission Letter Site A

November 9, 1998

Dear Parents,

We are currently enrolled in Saint Xavier University to work on and receive our Masters degree in Teaching and Leadership. As part of the requirements to receive our Master's degree, we have to complete an action research project. This project includes research about our topic, a formal paper, and an exhibition on the results of the project. The topic that we are interested in pursuing is if certain types of background music affects a student's academic achievement and performance.

This project, in no way, will change the units or activities that the students will experience. The only differences will be in the form of how the activities are presented to the students. The program will start with student surveys, tests, and observations. Then after employing some interventions, the students will be surveyed and tested again to see if student's academic achievement has improved when background music is used.

Your child may be included in the collection of data. Photos may be used but your child will not be formally identified in any way in the results. All information will be kept in strict confidence. Some of the photographs and students' work may be on display at the final exhibition of our Masters program at Saint Xavier University.

All participation will be in keeping with normal school procedures. If you have any questions about the research project or your child's involvement in the project, please contact us at school. Thank-you for your cooperation.

Sincerely,

Scheree Anderson, Jeanette Henke, Mary Ripp
Kerr Intermediate School

I give permission for_____to be included in the research. I understand my child's name will be kept anonymous and that my child will not be formally identified in photos.

_____ _____
Parent/Guardian Signature Date

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Appendix C (cont.)
Parent Permission Letter Site B

November 30, 1998

Dear Parents,

I am currently enrolled in Saint Xavier University to work on and receive my Masters degree in Teaching and Leadership. As part of the requirements to receive my Master's degree, I have to complete an action research project. This project includes research about my topic, a formal paper, and an exhibition on the results of the project. The topic that I am interested in pursuing is if certain types of background music (such as Mozart) affects a student's academic achievement and performance.

This project, in no way, will change the units or activities that the students will experience. The only differences will be in the form of how the activities are presented to the students (specifically spelling). The program will start with student surveys, tests, and observations. Then after employing some interventions, the students will be surveyed and tested again to see if student's spelling performance has improved when background music is used.

Your child may be included in the collection of data. Photos may be used but your child will not be formally identified in any way in the results. All information will be kept in strict confidence. Some of the photographs and students' work may be on display at the final exhibition of my Masters program at Saint Xavier University.

All participation will be in keeping with normal school procedures. If you have any questions about the research project or your child's involvement in the project, please contact me at school. Thank you for your cooperation.

Sincerely,

Mrs. Tuffs
Centennial School

I give permission for _____ to be included in the research. I understand my child's name will be kept anonymous and that my child will not be formally identified in photos.

_____ _____
Parent/Guardian Signature Date

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Appendix C (cont.)
Parent Permission Letter Site C

November 9, 1998

Dear Parent(s),

I am currently working towards my Master's degree in Teaching and Leadership through Saint Xavier University. As part of the degree requirement, an action research project must be completed. This project includes research about a topic, a formal paper, and an exhibition of the findings of the project. The topic that I have chosen is background music and its effects, if any, on student achievement and performance.

This project will begin with student surveys, tests, and classroom observations. After implementing the playing of classical background music, the students will be surveyed and tested again to determine if the playing of background music had a positive effect on students' academic achievement.

Your child may be included in the collection of data and photographs may also be used. Please note that your child will not be formally identified in any way in the results. Some of the photographs and students' work may be on display at the final exhibition at Saint Xavier University.

If you have any questions about the research project or your child's involvement in the project, please do not hesitate to contact me. Thank you for your cooperation.

Sincerely,

Máureen A. McLaughlin
Resource Teacher

I give my permission for my child to be included in the research project. I understand that my child's name will be kept anonymous and that my child will not be formally identified in photographs.

_____ _____

Parent/Guardian Signature Date

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Appendix D
Administrative Approval

SAINT·XAVIER·UNIVERSITY

Field-Based Master's Program

Saint Xavier University and SkyLight
Field-Based Master's Program

To: School Administrators

From: Program Research Staff

Date: December, 1998

Candidates for the degree of Master of Arts in Teaching and Leadership are required to identify a local educational issue and to design a project to address that issue, with a view to improving educational practice. The candidate listed below has designed an action research project and summarized that design in the attached preliminary abstract. You are encouraged to review this document and share any questions or comments you might have with the degree candidate. Members of the program staff are also available should you have further questions.

Please indicate, on the form provided, that you are aware and approve of the purpose and scope of the proposed project. The form may be returned to the candidate who will forward it to the university. Our best wishes for a successful school year, and we look forward to meeting you at the Research Exhibitions in December, 1999.

Sincerely,

Lynn Bush, Ph.D.
Director, FBMP
Saint Xavier University
773-298-3159

Degree Candidate:_____

I have been made aware of the purpose and scope of the candidate's Action Research Project, and I approve of its implementation.

_____

Signature of School Official Date

3700 West 103rd Street • Chicago, Illinois 60655 • (773) 298-3159 • FAX (773) 779-3851

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Appendix E
Anecdotal Notes

Notes (Comments students' made)

It relaxes me
It makes me comfortable
Mrs. Ripp, " I'm doing better on my spelling, I think the music is helping me!" said Greg.
London said, "This music is cool!"
"I like this classical music" said Luis.
"That's cool, when you said the word slow, the music got slower!" said Richard and Jasmine.
"This music makes me want to go to sleep", said London.
"I like music when it relaxes you", said Richard.

Teacher Notes

When the music comes on and the students know the song they tend to hum along.
Heads bobbing to music while every one finishes.
Everyone is on task.
Very quiet and a lot of concentration.
If you forget to turn on the music, students will remind you.
Students tend to complete work to the rhytmn of the music.
Special populations need to self talk in order to spell
Tapping pencil to beat of music
Student's asked if it was time for spelling.
Handwriting improved with spacing and organization.
Not too many requests for the teacher to repeat words/sentences.

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Appendix E (cont.)
Anecdotal Notes

PLUS

1. It helps you to relax.
2. Music helps you concentrate.
3. The music is very comforting.
4. Music helps you remember and spell the words.
5. It helps us to work faster.
6. Music is not distracting.
7. It helps us to do our work better.
8. The music is quiet.
9. It calms us when we feel nervous about a test.

MINUS

1. Teacher played too much repetition of the same song.
2. Music was either too fast or too long sometimes.
3. Music made me sometimes forget my answers.
4. Music can sometimes be distracting.
5. Sometimes it makes you want to go to sleep because it relaxes you.
6. It took awhile to get used to hearing the music.
7. Sometimes got nervous when you hear the music played because then you knew the test was coming.

Appendix E (cont.)
Anecdotal Notes

INTERESTING

1. When we heard the same music when we were learning the words and then when we were tested on the words, we remembered how to spell them better.
2. Music improved our grades. Some of us got C's and D's and when we started to listen to the music, our grades improved, even to A's and B's.
3. It kept the class less talkative while learning the words.
4. Music helps us remember the words by forming pictures in our minds.
5. Our moods changed as the melody changed.
6. We studied at home with the music and that helped us remember the words when the music was played with the test.
7. Music feeds your brain by "enhancing" your memory cells.
8. Soft music helps you to concentrate.